

## HOW TO TIDE OVER THE CRISIS OF AGRICULTURAL PRODUCTIVITY IN INDIA – AN ANALYSIS

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### ABSTRACT

This paper is a critical review of present situation of agricultural productivity and different types of agrarian crisis in India. It outlines the fundamental malaise behind the current global food crisis and shows comparative analysis of agricultural productivity among different countries of the world. Finally, the paper provides different ways to sort out the agrarian crisis in India. The paper explains why we need to boost agricultural productivity on the size and scale that we have achieved in industry and services. Clearly, there is need for a greater focus on the growth of the agricultural sector. What is also needed is an institutional mechanism to bring in effective public-private partnerships that can change the face of Indian agriculture.

### Introduction

While the overall economy has been growing at about 8% per annum for the past couple of years, the growth of agriculture has been dismal at about 2% per annum since 1997-98. This is in sharp contrast to the growth rate of more than 4% per annum which agriculture registered during 1992-96. It is this steep decline in agricultural growth rate that is causing distress in Indian agriculture.

There is a pronounced tendency among policy makers as well as in academic and media debates to look at the agrarian crisis in India in terms of its overt manifestations such as farmers' suicides, shortages in domestic food grain supplies and environmental degradation. Measures to tide over these problems do indeed demand urgent attention. But, unless we pay attention to the roots of the agrarian crisis, such measures will remain palliatives.

### Agricultural Productivity Among Different Countries

The fundamental malaise behind the current global food crisis is that, the world over, the yield of agricultural crops has been nearly flat for over a decade. (See the accompanying **table -1.**)

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**Table - 1**  
**Plateauing Yields( in MT/Hectare)**

	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
<b><u>Wheat</u></b>						
India	2.71	2.77	2.62	2.71	2.59	2.63
China	3.81	3.78	3.93	4.25	4.28	4.55
USA	2.70	2.36	2.91	2.90	2.82	2.60
Turkey	1.82	1.96	1.95	2.15	2.15	2.03
Canada	1.80	1.96	1.95	2.15	2.15	2.03
<b><u>Corn</u></b>						
China	4.70	4.92	4.81	5.12	5.29	5.39
USA	8.67	8.12	8.93	10.06	9.29	9.36
Argentina	6.00	6.33	6.52	7.37	6.48	8.04
South Africa	2.84	2.65	2.94	3.64	3.41	2.52
<b><u>Rice</u></b>						
Brazil	3.30	3.25	3.43	3.37	3.86	3.81
India	3.14	2.67	3.13	2.95	3.17	3.18
China	6.16	6.19	6.06	6.31	6.26	6.23
Indonesia	4.41	4.5	4.56	4.64	4.59	4.6
Thailand	2.62	2.57	2.65	2.63	2.70	2.69
<b><u>Soya</u></b>						
Brazil	2.66	2.82	2.37	2.31	2.56	2.85
India	0.90	0.71	1.05	0.73	0.90	0.95
Argentina	2.63	2.82	2.36	2.71	2.66	2.99
China	1.63	1.73	1.65	1.81	1.70	1.72
USA	2.66	2.56	2.28	2.84	2.89	2.87

**Sugar Cane**

Brazil	70.00	71.00	73.00	75.00	66.90	71.10
India	67.00	66.00	58.00	63.00	66.90	71.10
China	50.25	49.50	43.50	47.25	50.18	53.33
Thailand	71.00	71.00	70.00	61.00	66.90	71.10
Australia	73.80	82.60	82.60	87.10	94.10	88.80

**Source: Economic Times, 10<sup>th</sup> July 2008.**

Let us consider the productivity of wheat in India. It was 2.71 tonnes per hectare in 2002. It fell to 2.63 tonnes per hectare in 2007. India's productivity in rice was 3.14 tonnes per hectare in 2002. This has moved up marginally to 3.18 tonnes per hectare in 2007. The productivity of wheat in America has inched own from 2.7 tonnes per hectare in 2002 to 2.6 tonnes per hectare in 2007. Even Brazil's sugarcane productivity has slightly climbed up from 70 to 71.10 tonnes per hectare in the same five-year span.

If we scan the accompanying table, we can see that there has been practically no tangible increase in the yield of wheat, rice, corn, soya beans or sugarcane in any part of the world over the last 10 years. Agricultural productivity has stagnated internationally, while the consumption of agricultural products has steadily increased with the increase in income levels and population growth.

Let us come closer home. India's average rice yield today is 2.9 tonnes per hectare. By comparison, China's average rice yield, at 6.3 tonnes per hectare, is more than double that of India. South Korea has achieved an even higher rice yield, i.e., 6.8 tonnes per hectare.

**Reasons for Low Agricultural Productivity:**

What is the reason for India's consistently low agricultural productivity? In traditional agricultural practice, the productivity of foodgrains has averaged around one tonne per hectare, according to Prof Jeffrey D Sachs, Professor of Economics and Director of the Earth Institute at Columbia University. Traditional agriculture is patterned on a single annual crop and a single harvest, i.e., only one planting season in a year. The average yield of foodgrains has gone up to two tonnes per hectare, and in some cases, even up to three tonnes per hectare, after the Green Revolution. The Green Revolution triggered a quantum jump in productivity by creating high yielding

varieties of seeds and by enabling the optimal use of fertilizers and pesticides.

But agricultural productivity has again stagnated after the Green Revolution. Agricultural yields are now languishing around the world. But even here, what causes concern is that India's agricultural productivity is even lower than that of many other countries. India has 170 million hectares under food grains cultivation, producing 220 million tonnes of foodgrains in a year. China has only 60% of this arable land area. But it is able to harvest twice the quantity of foodgrains that India produces.

Interestingly, Oxford English Dictionary defines “agrarian” as “relating to landed property: a person advocating a redistribution of landed property”. Our approach to agrarian crisis hardly accords the priority which the issues relating to land ownership and the need for land reforms deserve. The latest evaluations of land reforms, which are already a decade old, reveal an alarming situation at the ground level concealed tenancies pushing down the cultivator to the status of a casual labourer, large scale encroachments of common property lands, continuing domination of large owners in agrarian communities and rural economy. Unfortunately, the land records fail to reveal the full extent of deterioration in the agrarian structure and the related trends which are operating without any check. This is the soil nourishing India's agrarian crisis.

The other and equally important aggravating factor is the strong technocratic bias in India's strategy for agricultural development. The Green Revolution of 1970s demonstrates the strength as well as weaknesses of the technocratic approach. There was a dramatic breakthrough in food grain production with rapid expansion in irrigation and use of modern inputs like fertilizer. There has been a less dramatic second round of Green Revolution during the eighties in the much larger dry, drought-prone and backward areas in crops like cotton and oilseeds and even some of the inferior cereals like ragi.

However, the technological transformation encountered barriers and was affected by numerous distortions long before reaching its culmination. Given the constraints of space, we can only note here the broad contours of the prevailing depressing agrarian scenario.

- Recent NSSO survey reveals that over 60% of farmers would like to shift out of agriculture but for most of them this would only mean jumping from the frying pan into the fire of urban jungle. The conditions of the growing mass of casualised labourers are even worse.

- A large number of districts in India remain agriculturally stagnant. The growth observed at the aggregate level is an outcome of contributions made by a relatively small number of “progressive” districts and crops.
- Both the Green Revolution and its extended version are losing their momentum. The policy maker desires agricultural growth rate of at least 4% per annum but is not quite sure of hitting the target. To make the situation more complicated, agriculture now carries a crushing burden of unsustainable support prices, regressive subsidies and wasteful uses of the two critical inputs of land and water because of wrong pricing policies.

### **India's Economic Survey Report:**

According to the Government of India's Economic Survey, the rate of growth in India's food production is 1.2% a year, significantly less than the population growth rate of 1.9%. The creation of additional irrigation potential in Indian agriculture was 3% a year in the 1990s. It has declined to 1.8% in 2007.

The total central plan spending on agricultural and allied activities, as a proportion of India's gross domestic product (GDP), is projected to decline from 1.42% in 2007-08 to 1.30% in 2008-09. Clearly, there is need for a greater focus, on the part of both the central and state governments, on the growth of the agricultural sector. What is also needed is an institutional mechanism to bring into being effective public-private partnerships that can change the face of Indian agriculture.

But while India's agriculture productivity has tended to stagnate, the country's per capita foodgrain consumption has continued to spiral. India's total foodgrain consumption is now growing at a rapid rate with the country's fast burgeoning population.

There are an estimated 400 million poor people in India. These poor people are now beginning to consume staple foods which they were not able to afford earlier. Consequently the demand for staples is beginning to rise steeply in India, creating apprehensions of a possible food shortage.

Sixty one years after Independence, India produces, on an average, only 14 kg of rice and wheat per person per annum, just a little over one kilogram per person over a month. Over 60% of India's net sown area still remains at the mercy of the monsoon. Most irrigation canals are choked with silt, garbage and sewage. About 60% of our farmers own only 0.4 hectares of land each. Another 20% of farmers

hold an average of 1.4 hectares each. Therefore 80% of our farmers are small and marginal farmers.

Every second, Indian farmer household is indebted. In 2003, out of the 89.33 million farmer households in India, 43.42 million households were indebted.

Nearly 87,000 farmers in India committed to suicide between 2001 and 2005; a span of four years. The per capita availability of foodgrains in India has declined from about 500 grams per day per person to less than 400 grams per day over the last two decades. Today the prospect of foodgrain imports is looming large.

To significantly enhance agricultural productivity, we must also become more open and receptive to the idea of experimenting with genetically modified (GM) crops like Bt cotton and Bt brinjal. Many countries have tackled food scarcity in the past with the introduction of conventionally bred, although gene-altered, high yielding crops. But this approach may not work in today's situation. Scaling up the genetic production potential of a crop through traditional plant breeding techniques is a long drawn out process. The problems plaguing Indian agriculture call for quick solutions that only molecular breeding can bring about.

#### **The Bio-fuels Programme:**

The fear that the bio-fuels programme is causing a food crisis in some parts of the world is unfounded. In countries like India and China, bio-fuels are not being manufactured from foodgrains. In India ethanol is made from an inedible sugarcane waste called molasses. Therefore abandoning the bio-fuels programme will not resolve the food crisis. We have to accept that there is a fundamental demand-supply gap in agricultural products in India, irrespective of the bio-fuels programme.

The enrichment of the soil and the enhancement of agricultural productivity require the balanced infusion of several nutrients. Excessive and exclusive dependence on nitrogenous and phosphatic fertilizers is very harmful to the soil. As a result, overall agricultural productivity is bound to decline.

Countries like Brazil have large swathes available for agriculture. However, in countries like India, China, Russia and America, the potential to get new cultivable land is very limited. The land available for agriculture in India is shrinking fast because of urbanisation, industrialisation, the construction of Special Economic Zones (SEZs), the development of the real estate business.

#### **Sorting out the Agrarian Crisis in India:**

The opening up of the farm sector is partly responsible for the crisis amongst cotton growers but the crisis in the entire agriculture sector has emerged because of criminal under-investment and utter neglect by policymakers. Farming is not remunerative and there is a crisis because of low productivity, poor water availability, lack of credit, low farm gate realizations, poor quality of seeds for most crops and lack of risk management tools. In order to sort out the agrarian crisis in India the Government of India should take the following measures:

**(a) Tackling Exploitation :**

The central government should promulgate a 'Prevention of atrocities on farmers and farm labourers Act' for addressing usurious money lending and land grabbing. Such an Act must stipulate that all lands grabbed by moneylenders in the last 10 years should revert back to the owners and there should be securitising of moneylenders' assets by banks. Courts must be instructed to start fast track cases instituted under this act.

The central government must instruct lead banks in all the districts through the RBI to securitise loans of legal moneylenders to farmers and take the asset(s) pledged with moneylenders as their own security and reschedule the loan as a loan from the bank to the farmer. For people who are landless or who do not have assets, such loans must be taken over by banks or micro finance institutions(MFIs) or co-operative banks on their books against the cash flows due to these people under the NREGP.

**(b) Medium-term Solutions for Credit :**

The central government should instruct all PSBs and large private banks to create 6,000-odd micro finance institutions under their tutelage at every tehsil in the country within six months. MFIs need to be greatly expanded as they lend to members and riskier classes which are outside the purview of the banking system today.

**(c) Augmenting water Availability and Efficiency :**

The 400-odd pending projects round the country need around Rs. 1,50,000 crore to be invested to add 21 mha of irrigated land and the Centre should pick up 100% of this cost since the states are unable to meet this cost. Improved efficiency (from 30% to over 40%) of water use in irrigation requires quantum jumps in the use of drip and sprinkler irrigation in India. For that to happen, the costs of these items have to be made far more cheaper than the levels existing today. Rainwater harvesting should be mandatory for all constructions in India.

**(d) Addressing Yields :**

Yields in India are stagnant for a decade now and the central government should give out Rs 200-300 crore (per crop) in grants in competitive bidding processes to public and private agencies who agree to bring out suitable seeds (especially in coarse grains, pulses and oilseeds) which would increase the yields to levels comparable to those present in the western world.

**(e) Risk Management :**

The futures markets should be used by farmer groups like producer companies, cooperatives and other associations to manage price risks on behalf of their individual members. The Bill on warehouse receipt system, which is pending since a long time, should be promulgated as an ordinance for deeper penetration.

**(f) Extension Education :**

The Centre should build a 24-hour national channel for agriculture with feeds going to all narrowcasting LPTs of Prasar Bharati. The government must contract out or build a countrywide network for primary research on scientific crop rotation and subsequent crop surveys to provide accurate supply - demand estimates all over the country.

**(g) Alternate Energy Crops :**

The bottlenecks for rapid growth and expansion of acreage under biofuel crops are largely excise duties on biofuel, sales taxes, non-availability of land for growing etc. These crops can bring millions of small holders or landless out of poverty and urgent steps need to be taken to kickstart this work.

**Suggestions:**

**(1) Massive Investments in Agriculture :**

To boost growth rates in agriculture, India needs massive investments in agriculture both public and private. But public investments in agriculture have been stagnating or falling over years, and stand at less than Rs 20,000 crore today. However the subsidy bill on food, fertilizer, power and irrigation has been ballooning, crossing Rs 80,000 crore, a ratio of almost 1:4 between investments and subsidies.

If Indian policy makers can reverse this ratio to 4:1, much of the woes of Indian agriculture will vanish. Research conducted by the International Food Policy Research Institute (IFPRI) clearly shows that the marginal returns in terms of agricultural growth as well as poverty alleviation are much higher through investments than through subsidies.



**(2) New Market Institutions for Risk Mitigation :**

There is a concern in certain circles that Indian agriculture is in crisis due to opening up to trade or going commercial. There is no doubt when one graduates from subsistence farming to commercial farming, the risks increase. But so do the incomes. Now farmers have to face not only natural risks which are there in subsistence farming too, but also market risks. By their very nature, commodity markets are volatile. But one cannot remain in subsistence farming either, if one has to come out of the poverty trap. So as interaction with markets, domestic and global, increases, India would need new market institutions for risk mitigation. Futures market is a step in the right direction, which needs to be strengthened. Tariff policy is another instrument that can help deal with fluctuations in global commodity prices. What if Commission on Agricultural Costs and Prices was to be converted to Agricultural Tariff Commission?

The real challenge of risk mitigation, however, comes in high value agriculture such as fruits and vegetables, dairy and livestock and fishery. Today this segment of agriculture already accounts for about 45% of agricultural output. But the policy environment is still obsessed with food grains.

**(3) Fast Moving Infrastructure and Innovative Institutions :**

The high value agriculture is highly perishable in nature and requires very fast moving infrastructure and innovative institutions to integrate farmers with processors and consumers. NDDDB scaled up this vertical coordination between farmers, processors and consumers in the dairy industry through co-operatives, which led to white revolution in India and today India can boast of being the largest producer of milk in the world. But similar coordination is often done by private companies too, domestic and foreign, be it Nanak dairy or Nestle in milk, through a sort of contract farming.

**(4) Contract Farming Through Private Companies :**

Whether it is the cooperatives, or contract farming through private companies, the key issue is minimising the market risk for farmers, creating a chain in marketing the produce of small holders, and using these institutions of vertical coordination to funnel back to the farmers new technologies, credit, extension work related to grades and standards, food safety, etc.

**(5) Scale up Institutions :**

India is lagging behind on this front compared to several countries in south-east

Asia. And there is an urgent need to scale up these institutions and engineer them in such a way that they help the small holders to take full advantage of it. This can go a long way to bring prosperity to Indian farmers. May be that is the next revolution in Indian agriculture.

**(6) Need more Flexibility to Protect Poor Farmers :**

Commerce minister Kamal Nath has reiterated that flexibilities for developing countries in the Doha round of talks must be adequate and appropriate for addressing the sensitivities of individual members. There can be no caveats such as number and trade volume limitations as proposed by the US to the usage of these flexibilities, he said at a meeting with World Trade Organisation director general Pascal Lamy in Geneva. Mr. Nath laid down the key Indian concerns on agriculture and Nama (industrial goods). In agriculture, he said India hopes to use the revised text on Special Products (SPs) and Special Safeguard Mechanism (SSM) to help promote the Indian farm sector, an official release said.

**Conclusion :**

What we really need to focus on therefore, is improving agricultural productivity. We need to boost agricultural productivity on the size and scale that we have achieved in industry and services. Such a substantial enhancement of agricultural productivity is possible only through the introduction of large scale irrigation, increased and judicious use of genetically modified crops, multiple cropping, the deployment of combined harvesters and significant and widespread improvements in agricultural practices.

But the situation is indeed grave owing to almost total neglect of structural issues combined with extremely short-sighted policies. Given the past record, it is obvious that any plea for land reforms would only be greeted by deaf ears! The best course would be to implement economic reforms to bring more rationality in agricultural policies along with creation of employment opportunities outside agriculture. The solution may not be quick or easy but we would at least be moving in the right direction. We have to pay the price for leaving behind Gandhiji in haste even before sighting Bill Gates on the horizon!

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